An experiment, that any one can perform, will illustrate this: Add a few drops of sulphate of indigo solution to some clear water; the water assumes an intense blue color, which color it retains on filtering through an ordinary filtering paper. But if we strew over the filter paper some powdered charcoal (animal charcoal is best) the water comes through perfectly colorless. If we use earth in place of the charcoal the water that passes through it is slightly colored, thus showing that earth is not so powerful an agent as charcoal. Now evidently here the earth or the charcoal have exercised a different influence from the filter paper alone. The filter paper will catch *suspended* matter. Thus muddy water passed through it becomes clear, but it does not alter chemically the substances in *solution*. We have just seen, though, that earth or charcoal does, and the usual hypothesis to account for this fact is that "porous substances condense gases—air, oxygen, etc., in proportion to the extent of their interior surface," and this oxygen actually destroys by *slow combustion* the substance in question. The enormous amount of surface to volume of porous charcoal or piles of earth permits the condensation of a large amount of gas which stands ready to attack any chemical body that can be decomposed or altered by it.

It must then be distinctly understood that the putrescent substances are not absorbed (as usually stated) by the earth or charcoal, or other porous material; but are chemically changed—oxidized or burnt up—so that their objectionable features are no longer perceived; the nitrogen, etc., is thrown off into the air, so that the earth has about the same constitution after its use in the manner indicated as before.

At Merthyr the effluent water from the filter beds was analyzed by Dr. Frankland; showing that when 230, 500 and 1,250 people were draining on to them per acre, the effluent water was respectively 30, 17 and 3 or 4 times purer than the standard of fair potable water.